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09/916,360	07/26/2001	Marco Giovanardi	2001-0111-01	7591

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EXAMINER

CHAU, COREY P

ART UNIT	PAPER NUMBER
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2644

DATE MAILED: 10/31/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/916,360	Applicant(s) GIOVANARDI ET AL.	
	Examiner Corey P. Chau	Art Unit 2644	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 July 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3,6-9,11,12,15 and 18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,6-9,11,12,15 and 18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

By

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

2. Claims 1, 3, 6, 9, 12, and 18 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6700304 to Fuller et al. (hereafter as Fuller).

3. Regarding Claim 1, Fuller discloses a device for reducing vibration in a section of material (12), said vibration causing an acoustic disturbance in a range of frequencies detectable by a target (i.e. active/passive distributed absorber for vibration and sound radiation control) (Fig. 1; column 2, lines 10-19), the device comprising: an active damper (14) comprising an electroactive element in electrical communication with an electrode (column 2, lines 20-33; column 5, lines 28-37), the active damper located a

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first distance from said section of material (Fig. 1); a passive damper comprising a sound reducing material (i.e. a mass layer 16 comprises a lead layer, which read on the passive damper), said passive damper located a second distance from said section of material (Fig. 1, reference 16; column 4, lines 37-59), wherein said second distance is greater than said first distance (Fig. 1), and wherein at least one of the active damper and the passive damper reduces the magnitude of the acoustic disturbance reaching the target (column 2, lines 3-9 and lines 54-63); and a constraining layer disposed in contact with said passive damper (Fig. 23; column 4, lines 38-60; column 12, line 55 to column 13, line 10).

4. All elements of Claim 3 are comprehended by Claim 1. Claim 3 is rejected for the reasons stated above apropos to Claim 1 (Fig. 1; column 4, lines 37-59).

5. Regarding Claim 6, Fuller discloses said active damper damps low frequency acoustic disturbances and said passive damper damps high frequency acoustic disturbances (column 1, lines 13-31; column 5, lines 1-14; column 6, lines 5-50).

6. Regarding Claim 9, Fuller discloses said active damper (14) is in mechanical contact with said section of material (12) (Fig. 1).

7. Regarding Claim 12, Fuller discloses the active damper further comprises a compensator including at least one positive position feedback (PPF) filter implemented on a digital signal processor (DSP) (Figs. 19 and 20; column 10, line 37 to column 39).

8. Regarding Claim 18, Fuller discloses a method of damping vibration in a section of material (12), said vibration causing noise audible to a human ear, comprising the steps of: bonding an actuator having active damping means (14), passive damping

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means (i.e. a mass layer 16 comprises a lead layer, which read on the passive damper) and a constraining means in contact with the passive damping means to a desired portion of the section of material (Fig. 1; column 2, lines 20-33; column 4, lines 37-59; column 5, lines 28-37); activating the active damping means to damp low frequency vibration in the section of material (column 1, lines 13-31; column 5, lines 1-14; column 6, lines 5-50); wherein the active damping means and the passive damping means together reduce noise to a greater extent than would be possible if the active damping means or the passive damping means act alone (column 2, lines 3-9 and lines 54-63).

9. Claims 1, 7, 9, 15, and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5315203 to Bicos.

10. Regarding Claim 1, Bicos discloses a device for reducing vibration in a section of material, said vibration causing an acoustic disturbance in a range of frequencies detectable by a target (abstract), the device comprising: an active damper (14) comprising an electroactive element in electrical communication with an electrode, the active damper located a first distance from said section of material (Figs. 1 and 4); a passive damper comprising a sound reducing material (16), said passive damper located a second distance from said section of material (Figs. 1 and 4), wherein said second distance is greater than said first distance (Figs. 1 and 4), and wherein at least one of the active damper and the passive damper reduces the magnitude of the acoustic disturbance reaching the target (Figs. 1 and 4); and a constraining layer disposed in contact with said passive damper (12).

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11. Regarding Claim 7, Bicos discloses the sound reducing material comprises a viscoelastic material (Figs. 1 and 4)

12. Regarding Claim 9, Bicos discloses said active damper is in mechanical contact with said section of material (Figs. 1 and 4).

13. Regarding Claim 15, Bicos discloses a device for reducing audible noise in a vehicle by reducing vibration of a vehicle section (abstract; column 3, lines 14-49), comprising: an actuator attached to a surface of the vehicle section, the actuator comprising at least one piezoelectric element and at least one electrode (14)(Figs. 1 and 4); a viscoelastic portion which is located outside the actuator with respect to the surface of vehicle section (16); and a constraining layer having a higher stiffness than said viscoelastic portion (10)(column 2, lines 22-40); wherein the at least one piezoelectric element and the at least one electrode are in electrical communication with each other (Figs. 1 and 4); the constraining layer is in mechanical contact with the viscoelastic layer and wherein the device functions to reduce noise by the actuator damping specific sound modes and by the viscoelastic portion damping all of the sound modes (Figs. 1 and 4).

14. Regarding Claim 18, Bicos discloses a method of damping vibration in a section of material, said vibration causing noise audible to a human ear (abstract), comprising the steps of: bonding an actuator having active damping means (14), passive damping means (16) and a constraining means (12) in contact with the passive damping means to a desired portion of the section of material (Fig. 4); activating the active damping means to damp low frequency vibration in the section of material (i.e. low frequency is

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not clearly define in the claim and can be interpreted as the frequency at which the active damping means is damping)(Figs. 1 and 4); wherein the active damping means and the passive damping means together reduce noise to a greater extent than would be possible if the active damping means or the passive damping means act alone (abstract; column 1, line 5 to column 2, line 59).

15. Claims 1, 7, 8, 9, 15, and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by U. S. Patent No. 5485053 to Baz.

16. Regarding Claim 1, Baz discloses a device for reducing vibration in a section of material, said vibration causing an acoustic disturbance in a range of frequencies detectable by a target (abstract), the device comprising: an active damper (40) comprising an electroactive element in electrical communication with an electrode, the active damper located a first distance from said section of material (Fig. 3); a passive damper comprising a sound reducing material (10), said passive damper located a second distance from said section of material (Fig. 3), wherein said second distance is greater than said first distance (Fig. 3), and wherein at least one of the active damper and the passive damper reduces the magnitude of the acoustic disturbance reaching the target (Fig. 3); and a constraining layer disposed in contact with said passive damper (50).

17. Regarding Claim 7, Baz discloses the sound reducing material comprises a viscoelastic material (Fig. 3).

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18. Regarding Claim 8, Baz discloses said viscoelastic material is selected from the group of viscoelastic materials consisting of: 3M Damping Foil, Soundcoat Soundfoil, EAR Tad Pad and Sorbothane (column 7, lines 56-65).

19. Regarding Claim 9, Baz discloses said active damper is in mechanical contact with said section of material (Fig. 3).

20. Regarding Claim 15, Baz discloses a device for reducing audible noise in a vehicle by reducing vibration of a vehicle section (abstract; column 10, lines 32-43), comprising: an actuator attached to a surface of the vehicle section, the actuator comprising at least one piezoelectric element and at least one electrode (40)(Fig. 3); a viscoelastic portion which is located outside the actuator with respect to the surface of vehicle section (10); and a constraining layer having a higher stiffness than said viscoelastic portion (50)(Fig. 3; Table 1); wherein the at least one piezoelectric element and the at least one electrode are in electrical communication with each other (Fig. 3); the constraining layer is in mechanical contact with the viscoelastic layer and wherein the device functions to reduce noise by the actuator damping specific sound modes and by the viscoelastic portion damping all of the sound modes (column 1, line 45 to column 2, line 15).

21. Regarding Claim 18, Baz discloses a method of damping vibration in a section of material, said vibration causing noise audible to a human ear (Fig. 3), comprising the steps of: bonding an actuator having active damping means (40), passive damping means (10) and a constraining means (50) in contact with the passive damping means to a desired portion of the section of material (Fig. 3); activating the active damping

means to damp low frequency vibration in the section of material (i.e. low frequency is not clearly define in the claim and can be interpret as the frequency at which the active damping means is damping)(Fig. 3); wherein the active damping means and the passive damping means together reduce noise to a greater extent than would be possible if the active damping means or the passive damping means act alone (abstract; column 1, line 45 to column 2, line 15).

Claim Rejections - 35 USC § 103

22. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

23. Claims 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6700304 to Fuller in view of U.S. Patent No. 5261200 to Sasaki et al. (hereafter as Sasaki).

24. Regarding Claim 7, Fuller discloses the second layer 16 is a distributed mass layer (e.g, absorber layer) which may have a constant thickness and may be comprised of a thin sheet of lead. It is well understood, however, that the mass distribution of the mass layer 16 may include varying masses within the mass layer 16 along the entire or large area of the structure 12, and other appropriate thin sheet material, such as, steel, aluminum composite fiberglass material and the like may be used when practicing the present invention, but does not expressly disclose the sound reducing material

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comprises a viscoelastic material. Therefore it would have been obvious to one having ordinary skill in the art to seek known sound reducing materials. Sasaki for example, discloses sound reducing materials such as oil damper, viscosity damper, lead damper, steel rod damper, friction damper, or **viscoelastic damper** in order to absorb vibration energy (column 8, lines 40-68). It would have been obvious to one having ordinary skill in the art to employ any known sound reducing materials, such as that of Sasaki.

Therefore it would have been obvious to one having ordinary skill in the art to modify Fuller with the teaching of Sasaki to utilize a sound reducing material comprising viscoelastic material in order to absorb vibrations.

25. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6700304 to Fuller in view of U.S. Patent No. 5261200 to Sasaki as applied to claim 7 above, and further in view of U.S. 6501644 to Silverman et al (hereafter as Silverman).

26. Regarding Claim 8, Fuller as modified discloses a viscoelastic layer, but only generally; no specific details are taught. Therefore it would have been obvious to one having ordinary skill in the art to seek known viscoelastic materials. Silverman for example discloses an example of suitable viscoelastic materials are Sorbothane from Sorbothane Company, rubber materials of the type available from the E.A.R. Co., and a Japanese source material, similar to Sorbothane, called Sorbo (column 4, lines 10-25). It would have been obvious to one having ordinary skill in the art at the time the invention was made to employ any known viscoelastic materials, such as that of

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Silverman. Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Fuller with the teaching of Silver man to utilize viscoelastic materials such as Sorbothane from Sorbothane Company, rubber materials of the type available from the E.A.R. Co., or a Japanese source material, similar to Sorbothane, called Sorbo (i.e. viscoelastic materials is selected from the group of viscoelastic materials consisting of: 3M Damping Foil, Soundcoat Soundfoil, EAR Tad Pad and Sorbothane).

27. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6700304 to Fuller in view of U.S. Patent Application Publication No. 20020092699 to Worrell et al. (hereafter as Worrell)

28. Regarding Claim 11, Fuller discloses an active damper (14), but only generally; no specific hardware or software is taught. Therefore it would have been obvious to have ordinary skill in the art to seek known active dampers. Worrell for example, discloses an active damper comprising a QuickPack.RTM. actuator. It would have been obvious to one having ordinary skill in the art to employ any known active dampers, such as that of Worrell. Therefore it would have been obvious to one having ordinary skill in the art to modify Fuller with the teaching of Worrell to utilize an active damper comprising a QuickPack.RTM. actuator.

29. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5315203 to Bicos in view of U.S. 6501644 to Silverman.

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30. Regarding Claim 8, Bicos discloses a viscoelastic layer, but only generally; no specific details are taught. Therefore it would have been obvious to one having ordinary skill in the art to seek known viscoelastic materials. Silverman for example discloses an example of suitable viscoelastic materials are Sorbothane from Sorbothane Company, rubber materials of the type available from the E.A.R. Co., and a Japanese source material, similar to Sorbothane, called Sorbo (column 4, lines 10-25). It would have been obvious to one having ordinary skill in the art at the time the invention was made to employ any known viscoelastic materials, such as that of Silverman. Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Bicos with the teaching of Silverman to utilize viscoelastic materials such as Sorbothane from Sorbothane Company, rubber materials of the type available from the E.A.R. Co., or a Japanese source material, similar to Sorbothane, called Sorbo (i.e. viscoelastic materials is selected from the group of viscoelastic materials consisting of: 3M Damping Foil, Soundcoat Soundfoil, EAR Tad Pad and Sorbothane).

Response to Arguments

31. Applicant's arguments filed 7/11/2005 have been fully considered but they are not persuasive.

32. With respect to Applicant's argument on page 6, stating that "no such structure or cooperation of structure is disclosed by the cited reference (i.e. Fuller et al.). In particular, Fuller et al. fail to teach or suggest a constraining layer in contact with the passive damper", has been note. However the Examiner respectfully disagrees. Fuller

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discloses the second layer 16 is a distributed mass layer (e.g, absorber layer) which may have a constant thickness and may be comprised of a thin sheet of lead. It is well understood, however, that **the mass distribution of the mass layer 16 may include varying masses within the mass layer 16 along the entire or large area of the structure 12**, and other appropriate thin sheet material, such as, steel, aluminum composite fiberglass material and the like may be used when practicing the present invention. Fuller discloses **several thin sheets of lead are stacked on top of each other** and are used to approximate the optimal mass distribution curve, as shown in Fig. 23. Applicant has not clearly define a constraining layer, which as be interpret as many things, such as lead, steel, aluminum, or composite fiberglass. Therefore, Fuller discloses several thin sheets of lead, steel, aluminum, or composite fiberglass, wherein at least one thin sheet of lead reads on a passive damper and at least one thin sheet of lead reads on a constraining layer; at least one thin sheet of steel reads on a passive damper and at least one thin sheet of steel reads on a constraining layer; at least one thin sheet of aluminum reads on a passive damper and at least one thin sheet of aluminum reads on a constraining layer; or at least one thin sheet of composite fiberglass reads on a passive damper and at least one thin sheet of composite fiberglass reads on a constraining layer. See Fig. 23; column 4, lines 38-60; column 12, line 55 to column 13, line 10.

33. With respect to Applicant's argument on page 6, stating that "Applicants respectfully contend that this statement in no way teaches or suggest a constraining later in contact with a passive damper, as those terms are known to one skilled in the

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pertinent art", has been noted. However the Examiner respectfully disagrees. See argument above.

34. Applicant's arguments with respect to claim 15 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

35. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Corey P. Chau whose telephone number is (571)272-7514. The examiner can normally be reached on Monday - Friday 9:00 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chin Vivian can be reached on (571)272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

October 26, 2005
CPC



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